isolating the betulonic aldehyde.

22. (Amended) A method of preparing betulonic aldehyde comprising:

reacting betulinol with chromium anhydride in acetone in the presence of sulfuric acid for a time and under conditions effective to produce a reaction mixture that includes betulonic aldehyde;

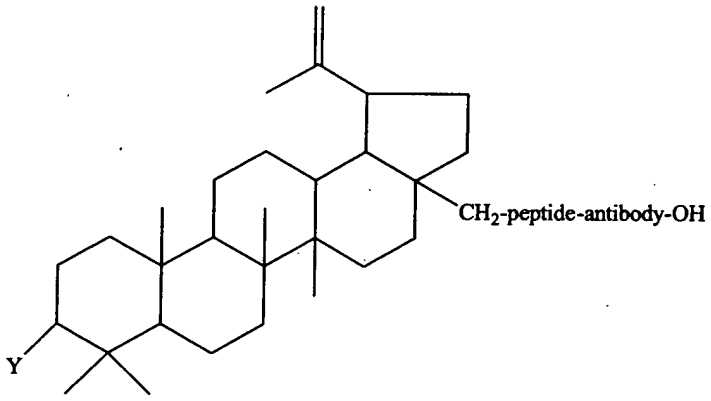
cooling the reaction mixture;

adding water to the reaction mixture, whereby a sediment containing betulonic aldehyde forms;

crystallizing the sediment; and

isolating the betulonic aldehyde.

23. (Twice-Amended) A method of producing a betulinol-antibody conjugate having the formula:



wherein

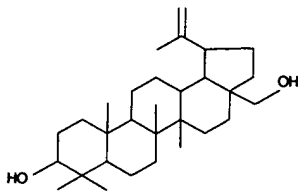
Y is a hydroxy group, an alkoxy group, or an alkanoyloxy group,

said method comprising:

wherein R is alkyl,

said method comprising:

alkylating a dialcohol having the formula:



with a nitrile having the formula:

R-C≡N

for a time and under conditions effective to form the diether, and

isolating the diether.

15. (Twice-Amended) A method of preparing betulonic aldehyde comprising:

oxidizing betulinol with chromium anhydride in acetone in the presence of sulfuric acid for a time and under conditions effective to produce betulonic aldehyde, and

isolating the betulonic aldehyde.

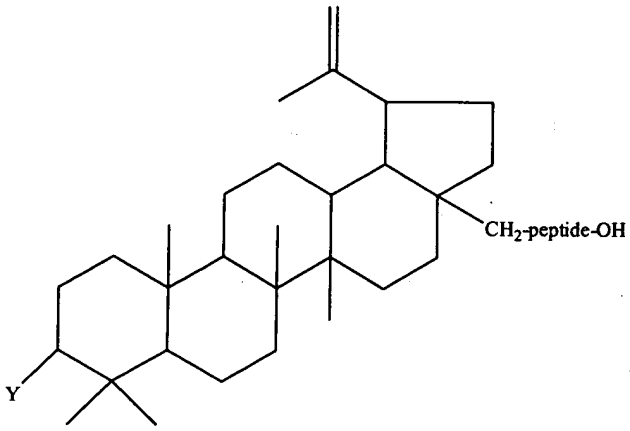
21. (Twice-Amended) A method of preparing betulonic aldehyde comprising:

reacting betulinol with chromium anhydride in acetone in the presence of sulfuric acid for a time and under conditions effective to produce a reaction mixture that includes betulonic aldehyde;

cooling the reaction mixture;

adding water to the reaction mixture, whereby a sediment containing betulonic aldehyde forms; and

reacting a betulinol peptide having the formula:

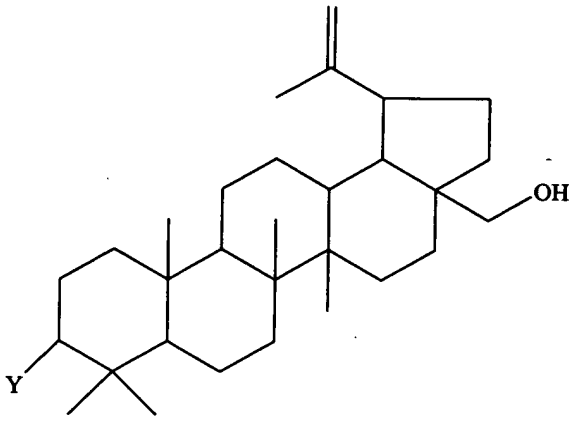


with an antibody having the formula H-antibody-OH for a time and under conditions effective to produce the betulinol-antibody conjugate, and

isolating the betulinol-antibody conjugate.

~~22~~ 23. (Twice-Amended) A method according to claim ~~17~~, wherein said betulinol peptide is obtained by a process comprising:

reacting a compound having the formula:



with a peptide having the formula H-peptide-OH for a time and under conditions effective to produce the betulinol peptide, and

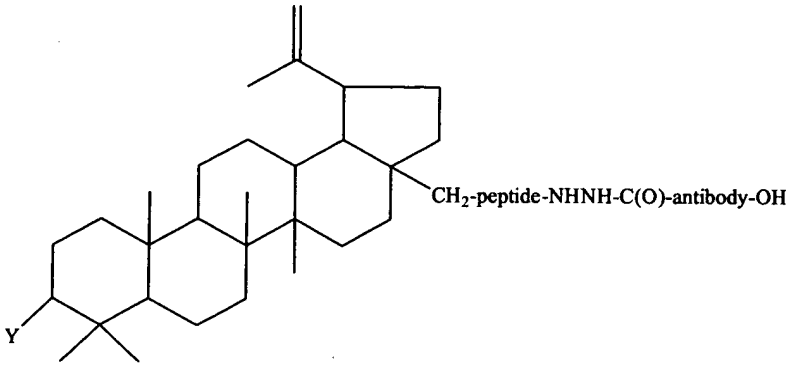
isolating the betulinol peptide.

29

23. (Twice-Amended) A method of producing a betulinol-antibody conjugate having the formula:

T, 0640

65



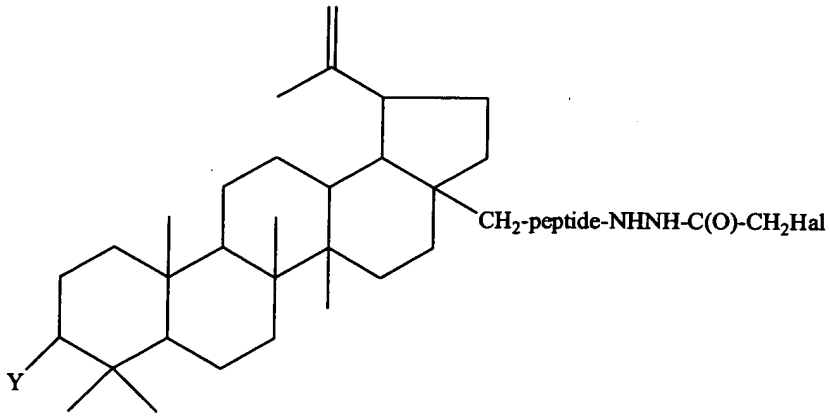
wherein

Y is a hydroxy group, an alkoxy group, or an alkanoyloxy group,

said method comprising:

reacting a haloacetylhydrazide having the formula:

T, 0641



wherein

Hal is a halogen

with an antibody having the formula H-antibody-OH for a time and under conditions effective to produce the betulinol-antibody conjugate, and

isolating the betulinol-antibody conjugate.

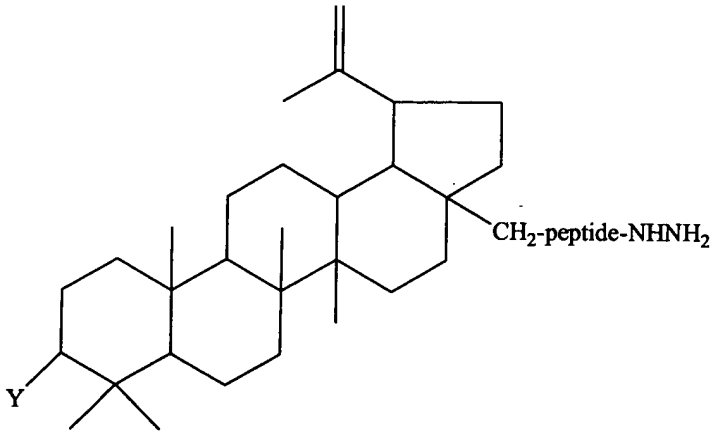
35 29

~~29~~. (Twice-Amended) A method according to claim ~~23~~, wherein said haloacetylhydrazide is obtained by a process comprising:

reacting a hydrazide having the formula:

T, 0650

606



with a *para*-nitrophenyl α-haloacetate for a time and under conditions effective to produce the haloacetylhydrazide, and

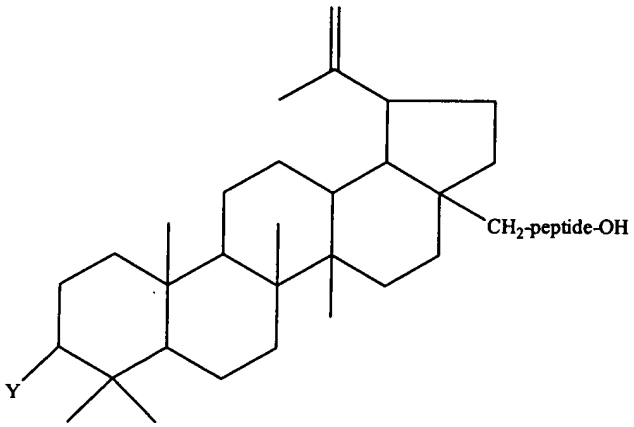
isolating the haloacetylhydrazide.

36 35

~~30~~. (Twice-Amended) A method according to claim ~~29~~, wherein said hydrazide is obtained by a process comprising:

reacting a betulinol peptide having the formula:

T, 0651



with hydrazine hydrate for a time and under conditions effective to produce the hydrazide, and

isolating the hydrazide.

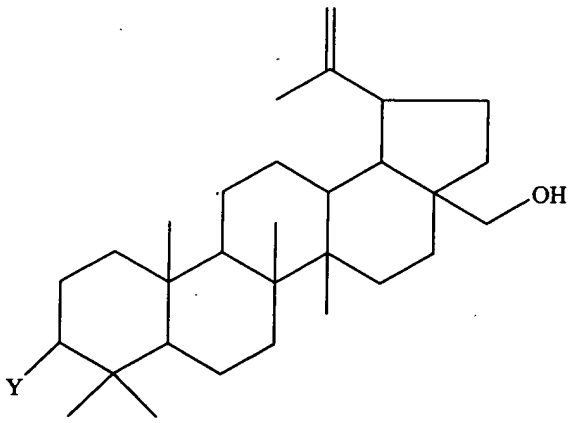
37

~~31~~. (Twice-Amended) A method according to claim ~~30~~ 36, wherein said betulinol peptide is obtained by a process comprising:

reacting a compound having the formula:

T, 0660

66



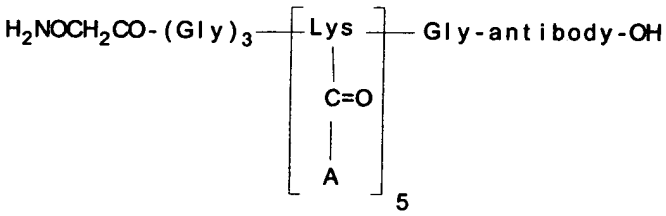
with a peptide having the formula H-peptide-OH for a time and under conditions effective to produce the betulinol peptide, and

isolating the betulinol peptide.

38 ~~33~~. (Twice-Amended) A method of producing a betulinol-antibody conjugate having the formula:

61

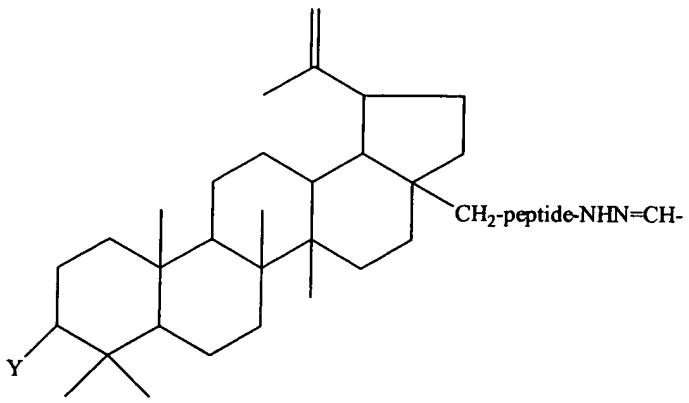
T, 0661



wherein

each "A" moiety is independently selected from the group consisting of a -CHO group and a moiety having the formula:

T, 0662



R562778.1

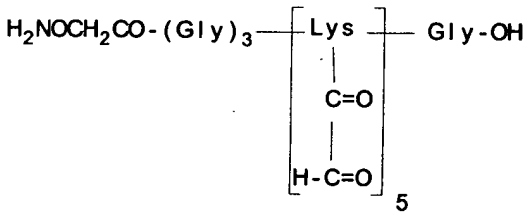
provided that at least one of A is not -CHO; and

Y is a hydroxy group, an alkoxy group, or an alkanoyloxy group,

said method comprising:

reacting a carrier molecule having the formula:

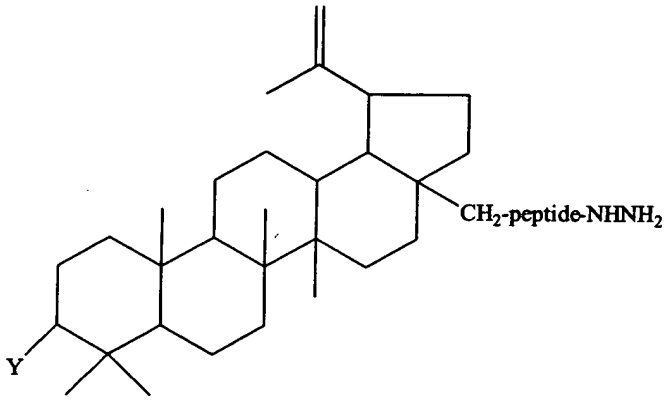
T, 0670



61

a hydrazide having the formula:

T, 0671



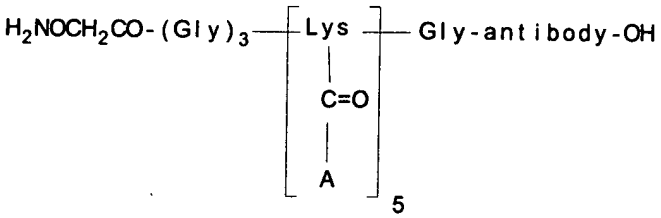
and an antibody having the formula H-antibody-OH for a time and under conditions effective to produce the betulinol-antibody conjugate, and

isolating the betulinol-antibody conjugate.

39

34. (Twice-Amended) A method of producing a betulinol-antibody conjugate having the formula:

T, 0680

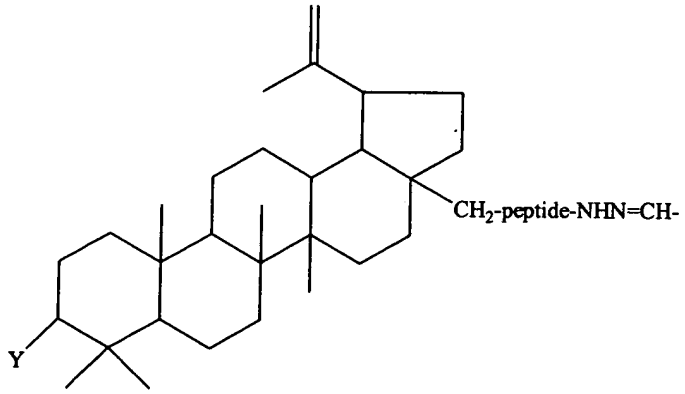


wherein

each "A" moiety is independently selected from the group consisting of a -CHO group and a moiety having the formula:

67

T, 0681



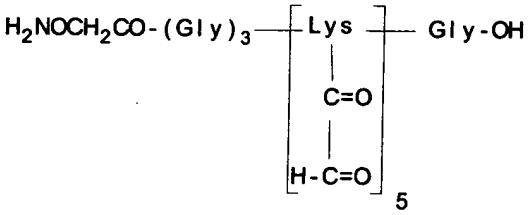
provided that at least one of A is not -CHO; and

Y is a hydroxy group, an alkoxy group, or an alkanoyloxy group,

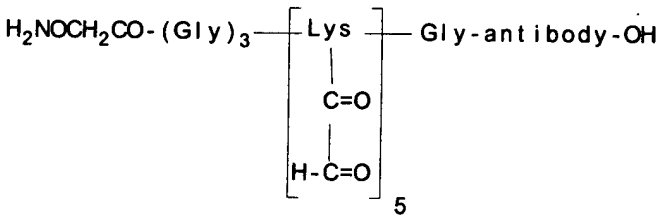
said method comprising:

reacting a carrier molecule having the formula:

T, 0682



with an antibody having the formula H-antibody-OH for a time and under conditions effective to produce an antibody-bound carrier molecule having the formula:

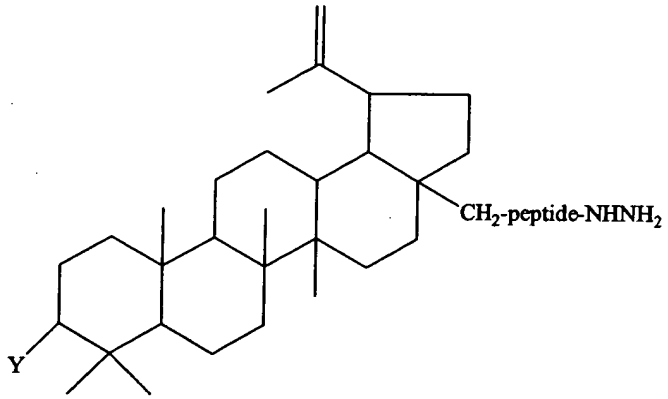


T, 0690

and

reacting the antibody-bound carrier molecule with a hydrazide having the formula:

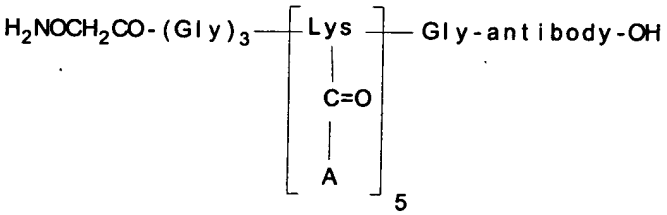
T, 0691



for a time and under conditions effective to produce the betulinol-antibody conjugate, and isolating the betulinol-antibody conjugate.

35. (Twice-Amended) A method of producing a betulinol-antibody conjugate having the formula:

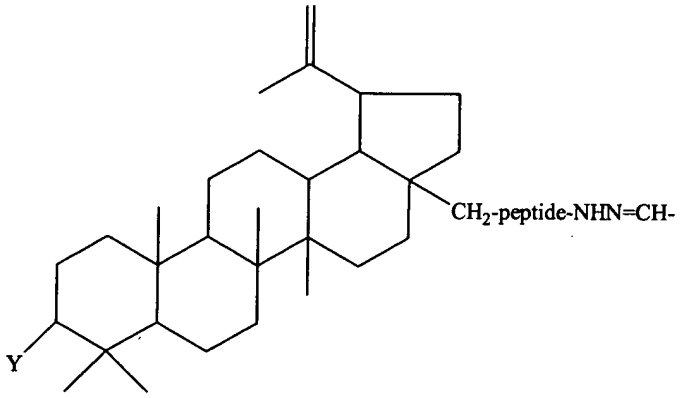
T, 0692



wherein

each "A" moiety is independently selected from the group consisting of a -CHO group and a moiety having the formula:

T, 0700



61

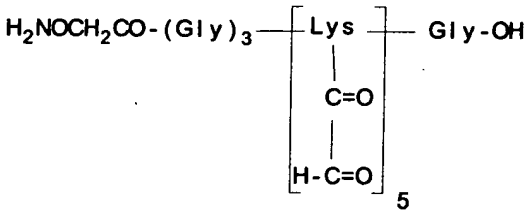
provided that at least one of A is not -CHO; and

Y is a hydroxy group, an alkoxy group, or an alkanoyloxy group,

said method comprising:

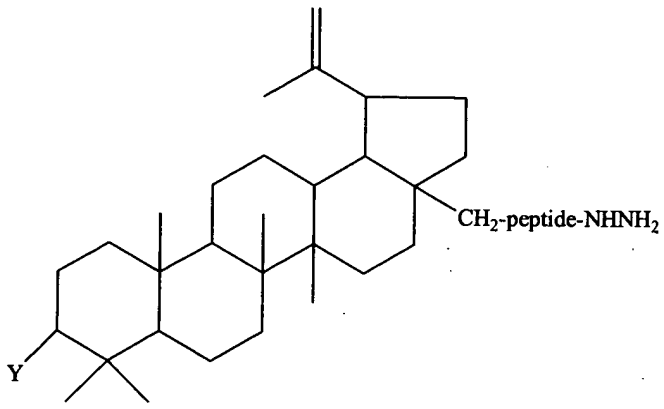
reacting a carrier molecule having the formula:

T, 0701



with a hydrazide having the formula:

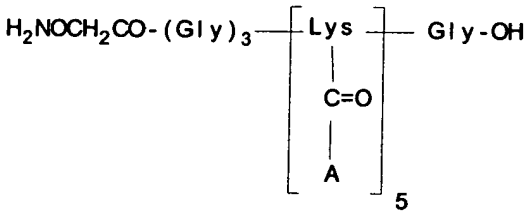
T, 0710



for a time and under conditions effective to produce a betulinol-bound carrier molecule having the formula:

61 Cont

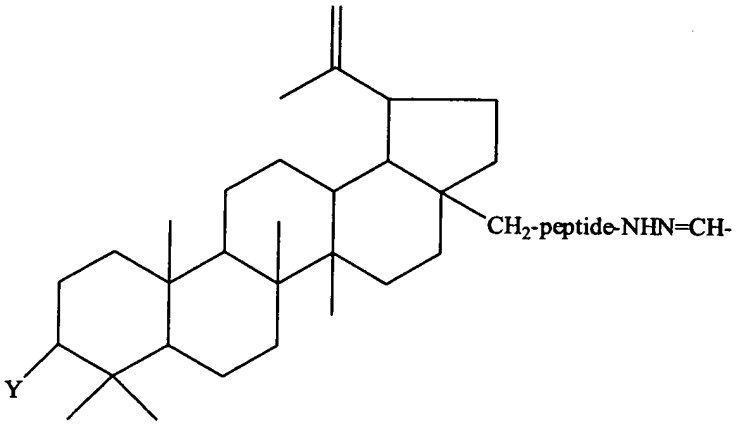
T, 0711



wherein

at least one A is a moiety having the formula:

T, 0712



and

reacting the betulinol-bound carrier molecule with an antibody having the formula H-antibody-OH for a time and under conditions effective to produce the betulinol-antibody conjugate, and

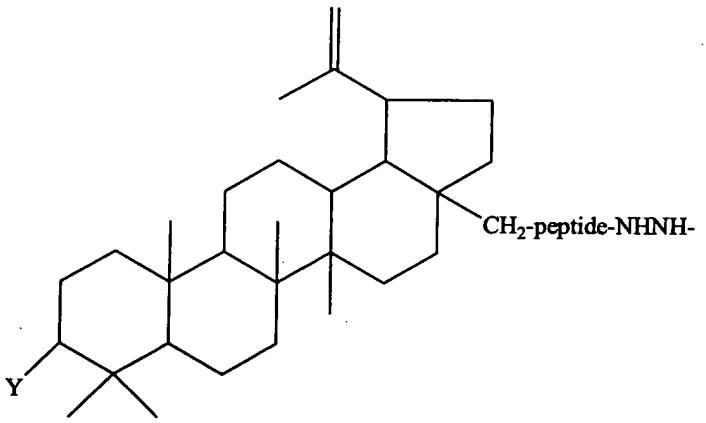
isolating the betulinol-antibody conjugate.

36. (Twice-Amended) A betulinol-antibody conjugate having the formula:

$$HO\text{-antibody-spacer-}(A)_n$$

wherein

A is a moiety having the formula:



Y is a hydroxy group, an alkoxy group, or an alkanoyloxy group;

"spacer" is multivalent moiety bonded to the antibody and $(A)_n$; and

n is an integer from 1 to 100.

38. (Twice-Amended) A betulinol-antibody conjugate according to claim 36, wherein "spacer" is a multivalent moiety produced from a diamine derivative of polyethylene glycol having 2-(pyridyldithio)-propionyl and N-hydroxysuccinimide ester groups bonded thereto.

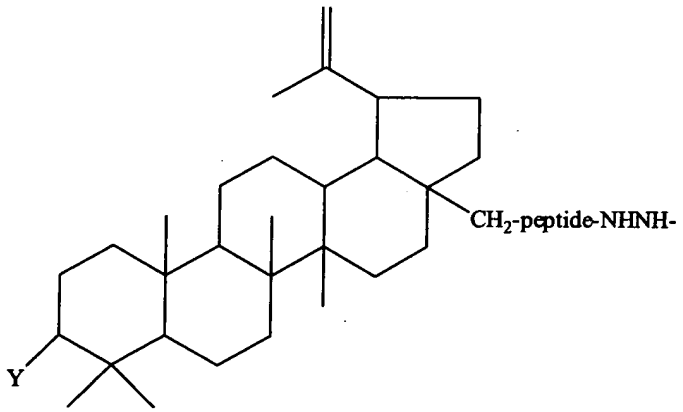
39. (Twice-Amended) A betulinol-antibody conjugate according to claim 36, wherein "spacer" is a multivalent moiety produced from a branched form of polyethylene glycol propionic acid N-hydroxysuccinimide ester.

41. (Twice-Amended) A method of producing a betulinol-antibody conjugate having the formula:

HO-antibody-spacer-$(A)_n$

wherein

A is a moiety having the formula:



Y is a hydroxy group, an alkoxy group, or an alkanoyloxy group;

"spacer" is multivalent moiety bonded to the antibody and $(A)_n$; and

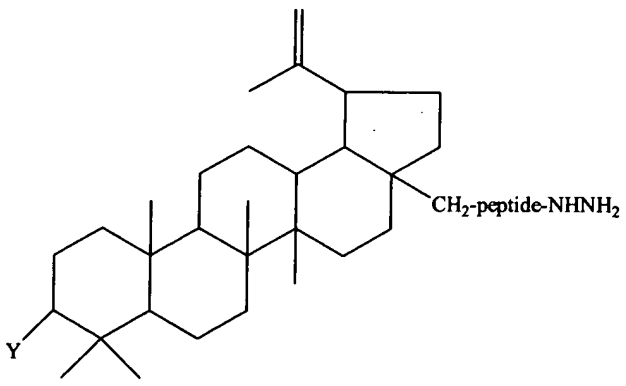
n is an integer from 1 to 100,

said method comprising:

providing a "spacer" having a first reactive terminus and one or more second reactive termini;

reacting an antibody with the first reactive terminus;

reacting a hydrazide having the formula:



E9 Cont

with one or more of the one or more second reactive termini for a time and under conditions effective to produce the betulinol-antibody conjugate; and

isolating the betulinol-antibody conjugate.

E10

45. (Twice-Amended) A method according to claim 41, wherein "spacer" is a multivalent moiety produced from a diamine derivative of polyethylene glycol having 2-(pyridyldithio)-propionyl and N-hydroxysuccinimide ester groups bonded thereto.

46. (Twice-Amended) A method according to claim 41, wherein "spacer" is a multivalent moiety produced from a branched form of polyethylene glycol propionic acid N-hydroxysuccinimide ester.